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A	<div><div></div><div>POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656</div></div>																																		
B																																			
C	<div>CONTRACTOR : ABB Contracting Company</div> <div>CLIENT : National Gridsa</div> <div>PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8</div> <div>SUBSTATION : S/S 8709</div> <div>CONTRACT NO. : 11131113/00</div> <div>TITLE : Logic Diagram – ACSE</div>																																		
D																																			
E																																			
F																																			
G	<table><tr><td colspan="2">AS-BUILT BY _____ DATE _____</td><td>CONTRACT NO. 11131113/00</td><td>JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td></tr><tr><td></td><td></td><td></td><td>DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u></td><td colspan="3">132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE</td></tr><tr><td>00</td><td>13 09</td><td>FOR APPROVAL</td><td>DATE STARTED <u>2.22.2013</u> DATE COMPLETED _____</td><td colspan="3">S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td>OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u></td><td colspan="3">RIYADH SAUDI ARABIA</td></tr></table>							AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET						DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>	132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE			00	13 09	FOR APPROVAL	DATE STARTED <u>2.22.2013</u> DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	RIYADH SAUDI ARABIA		
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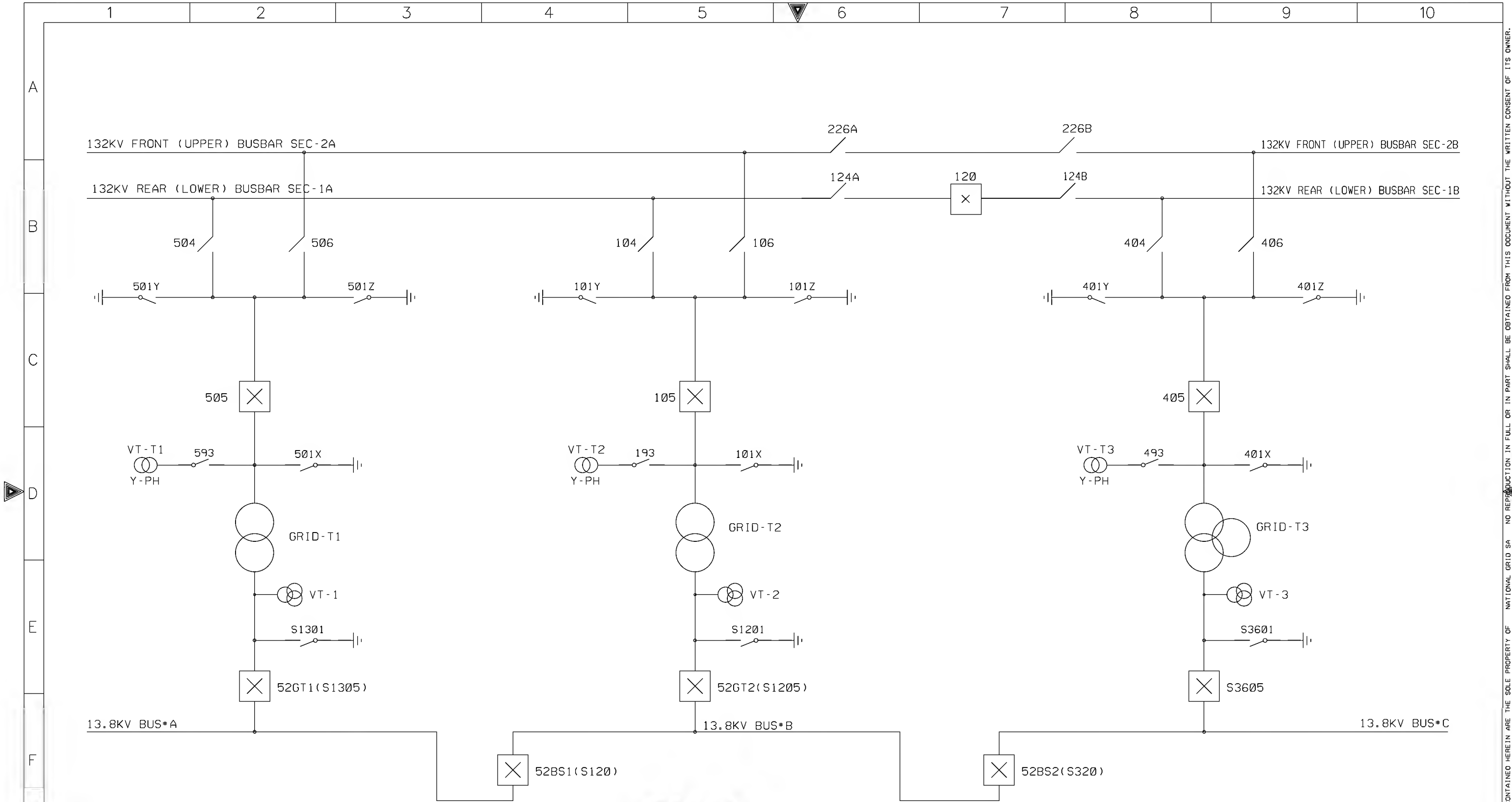
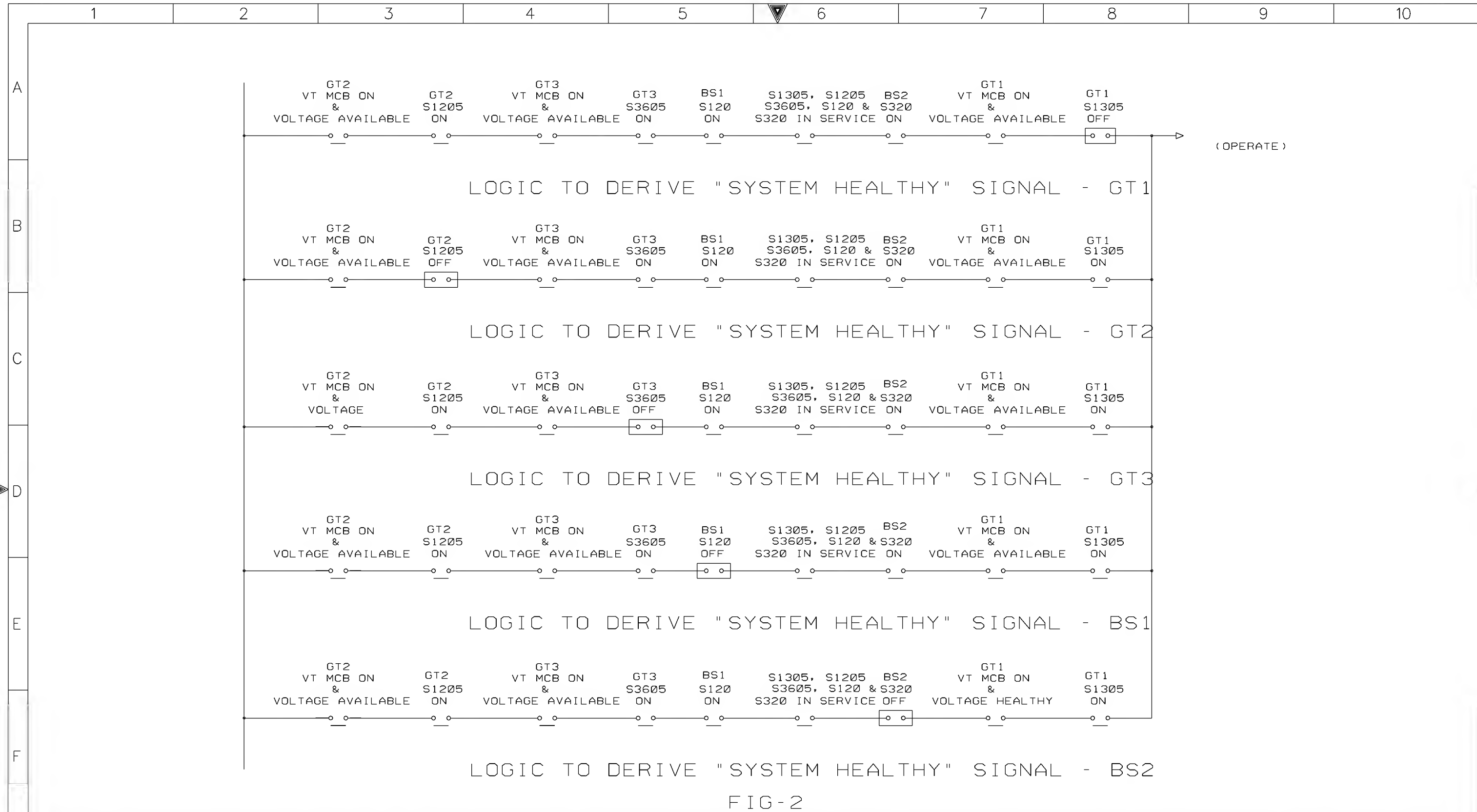



FIG - 1

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			
			DATE STARTED <u>2.22.2013</u> DATE COMPLETED _____			
<u>00</u>	<u>13 09</u>	<u>FOR APPROVAL</u>	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			
REV. NO.	DATE	DESCRIPTION				


LOGIC DIAGRAM +ACSE/TOP	
132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT-ACSE	
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-322961		SHT	CONT.
				101	102
				REV. NO.	
				00	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LOGIC DIAGRAM +ACSE/TOP		الشركة الوطنية لنقل الكهرباء National Grid sa				نقل الكهرباء								
					DRAWN BY RIZ CHECKED BY KVR		132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE														
					DATE STARTED 2.22.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.						
	00	13 09	FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		P	C421	CD-322961		SHT	CONT.	00						
	REV. NO.	DATE	DESCRIPTION																		
																NG/D2-D (2012/01)					
																DMS		VECTOR		NGD200	

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A										
B	ACSE LOGIC (APPLICABLE FOR GT1-LVCB-S1305)									
C	THE STAND-BY TRANSFORMER (GT1) CAN BE BROUGHT IN ONLY IF THE FOLLOWING CONDITIONS ARE SATISFIED:									
	1. ACSE IS ' IN ' SERVICE AND									
	2. GT1-LVCB (S1305) IS OFF AND									
	3. GT1-MV SWGR-VT MCB ON & VOLTAGE AVAILABLE AND									
	4. GT1 - PROTN. TRIP RELAYS RESET AND									
	5. SEC-A STUCK BREAKER PROTECTION NOT OPERATED AND									
	6. ALL THE BREAKERS ARE IN SERVICE POSITION AND									
D	EITHER									
	1. GT3 - MV SWGR - VT MCB ON & VOLTAGE AVAILABLE & GT3 INCOMER BREAKER IS ON.									
	2. GT2 RECEIVES 'ACSE START' SIGNAL AND GT2 BREAKER IS OFF.									
	3. BS1 IS ON.									
	(THIS CONDITION SHOULD NOT BE CHECKED IF ACSE START SIGNAL COMES FROM STUCK BREAKER PROTECTION OF BUS SECTION A OR B)									
	4. BS2 BREAKER IS ON.									
	(THIS CONDITION SHOULD NOT BE CHECKED IF STUCK BREAKER PROTECTION OF BUS SECTION B OR C OPERATES.)									
E	OR ELSE									
	SIMILAR SET OF LOGICS IF GT3 INITIATES 'ACSE START' SIGNAL									
	OR ELSE									
	SIMILAR SET OF LOGICS IF BS1 INITIATES 'ACSE START' SIGNAL									
	OR ELSE									
F	SIMILAR SET OF LOGICS IF BS2 INITIATES 'ACSE START' SIGNAL									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LOGIC DIAGRAM +ACSE TOP		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid SA</div>						
			DRAWN BY RIZ		CHECKED BY KVR		132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE								
			DATE STARTED 2.22.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY								
			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								
	FOR APPROVAL														
REV. NO.		DATE		DESCRIPTION		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
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A																																																																																
B	ACSE LOGIC (APPLICABLE FOR GT2-LVCB-S1205)																																																																															
C	THE STAND-BY TRANSFORMER (GT2) CAN BE BROUGHT IN ONLY IF THE FOLLOWING CONDITIONS ARE SATISFIED:																																																																															
	1. ACSE IS ' IN ' SERVICE																																																																															
	2. GT2-LVCB (S1205) IS OFF																																																																															
	3. GT2-MV SWGR-VT MCB ON & VOLTAGE AVAILABLE																																																																															
	4. GT2 - PROTN. TRIP RELAYS RESET																																																																															
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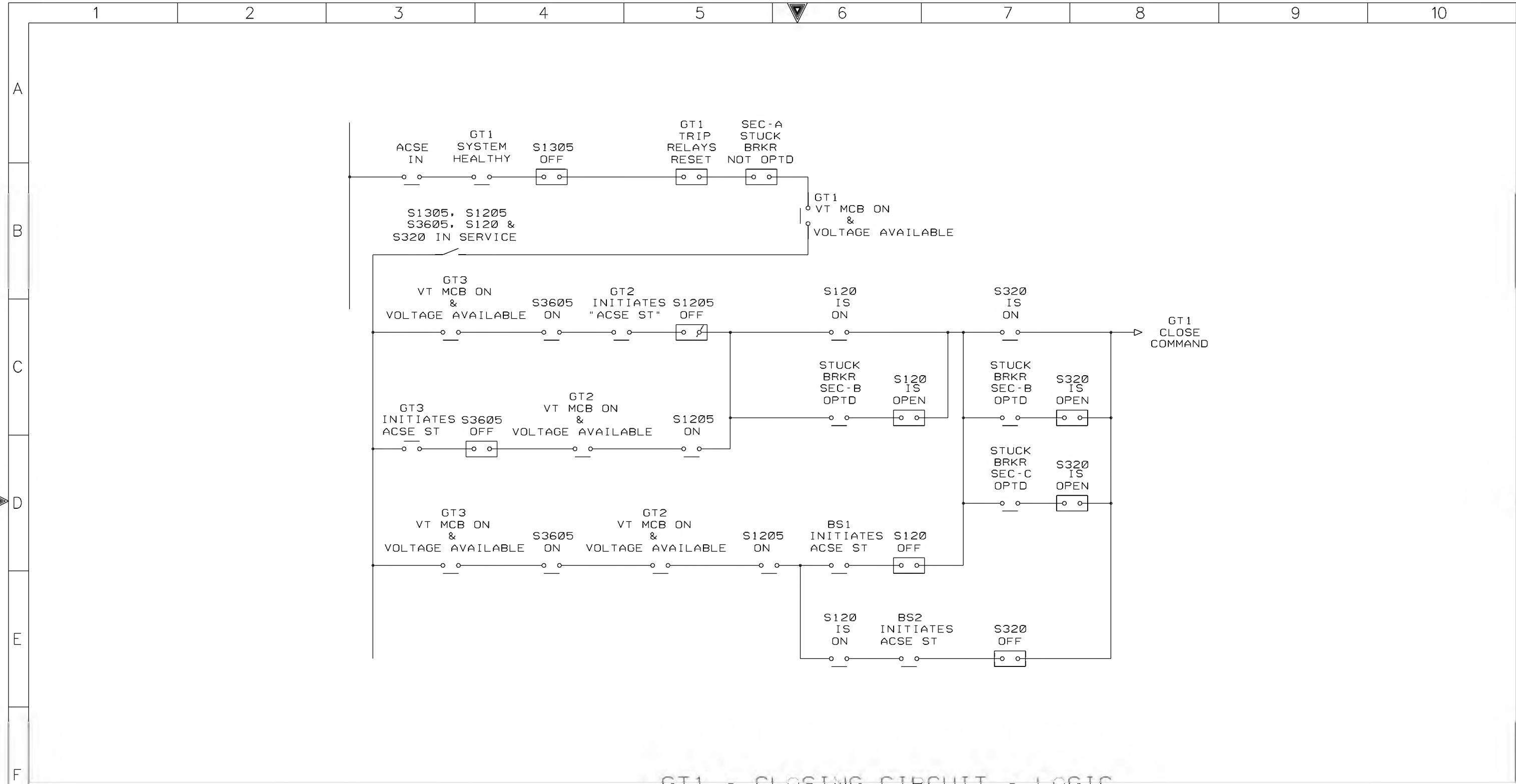
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DMS

VECTOR

NG/D2-D (2012/01)

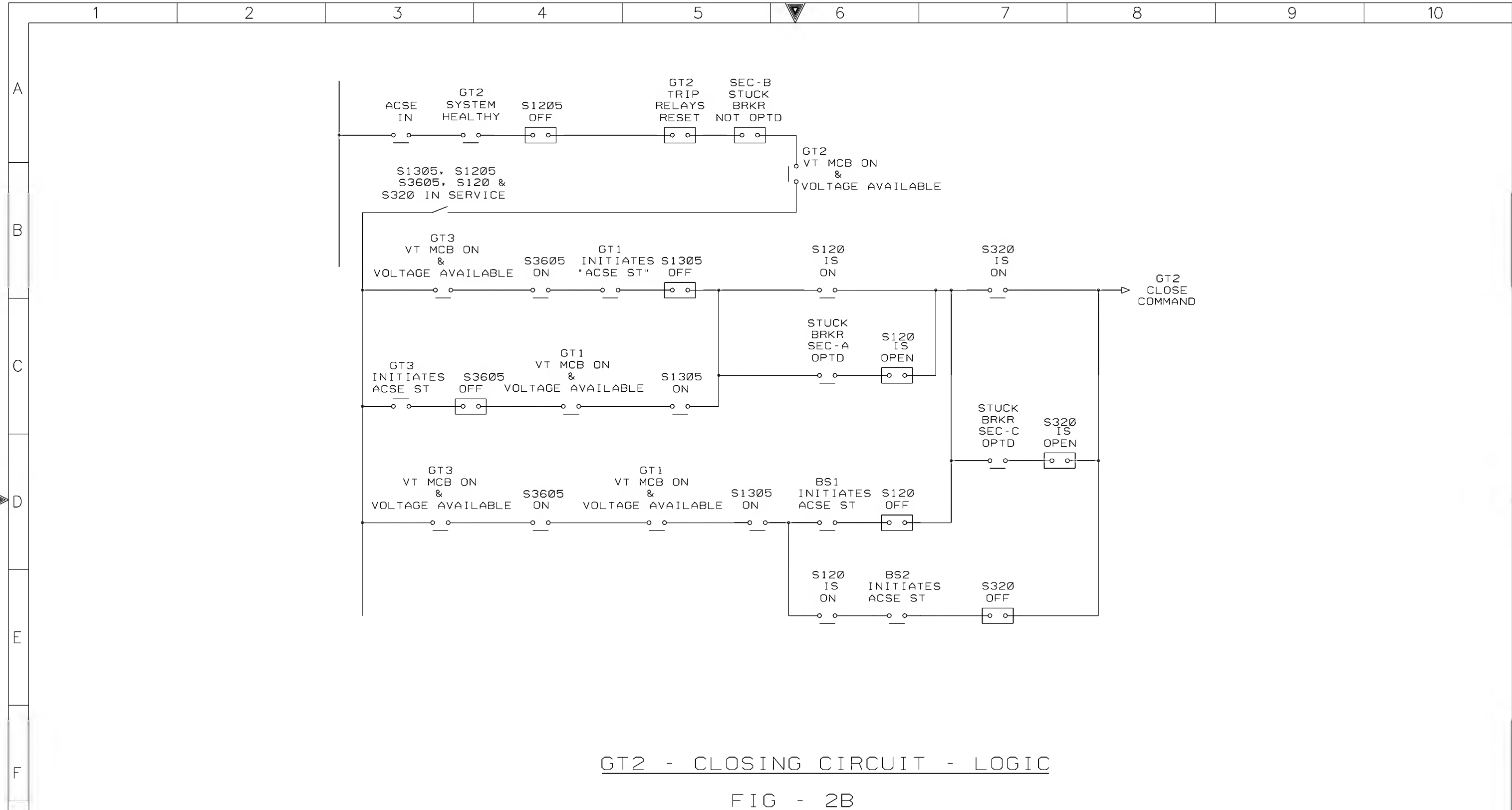
NGD200



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
DRAWN BY RIZ CHECKED BY KVR			DATE STARTED 2.22.2013 DATE COMPLETED _____	
00 13 09 FOR APPROVAL			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	
REV. NO.	DATE	DESCRIPTION		

LOGIC DIAGRAM +ACSE TOP	
132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE	
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
P	C421	CD-322961	SHT 105	CONT. 105A	00



AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
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LOGIC DIAGRAM +ACSE TOP	
132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT-ACSE	
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
P	C421	CD-322961	105A105B
		REV. NO.	
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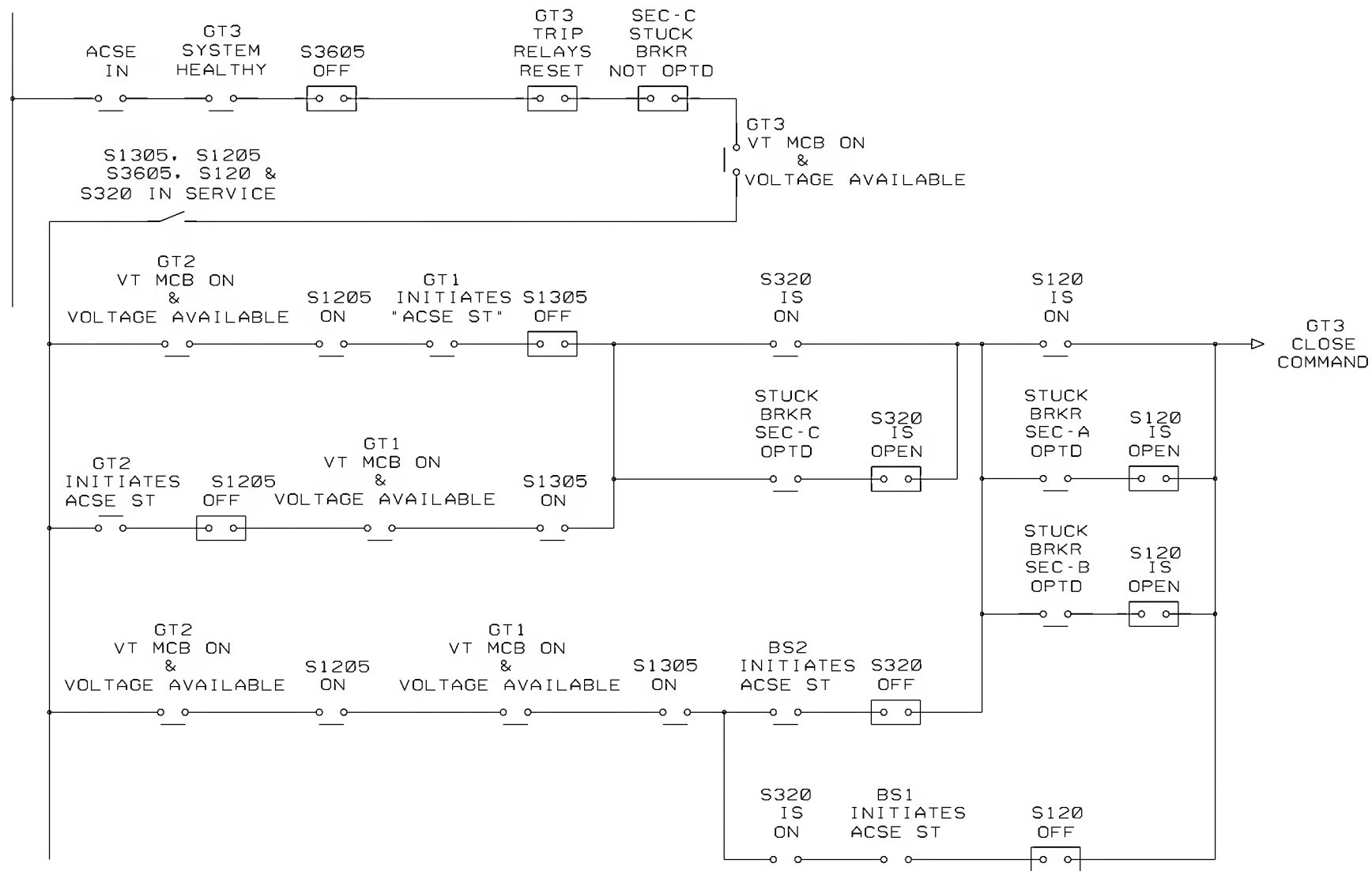
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D

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G



GT3 - CLOSING CIRCUIT - LOGIC

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ	CHECKED BY KVR
			DATE STARTED 2.22.2013	DATE COMPLETED _____
00	13 09	FOR APPROVAL	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC
REV. NO.	DATE	DESCRIPTION		

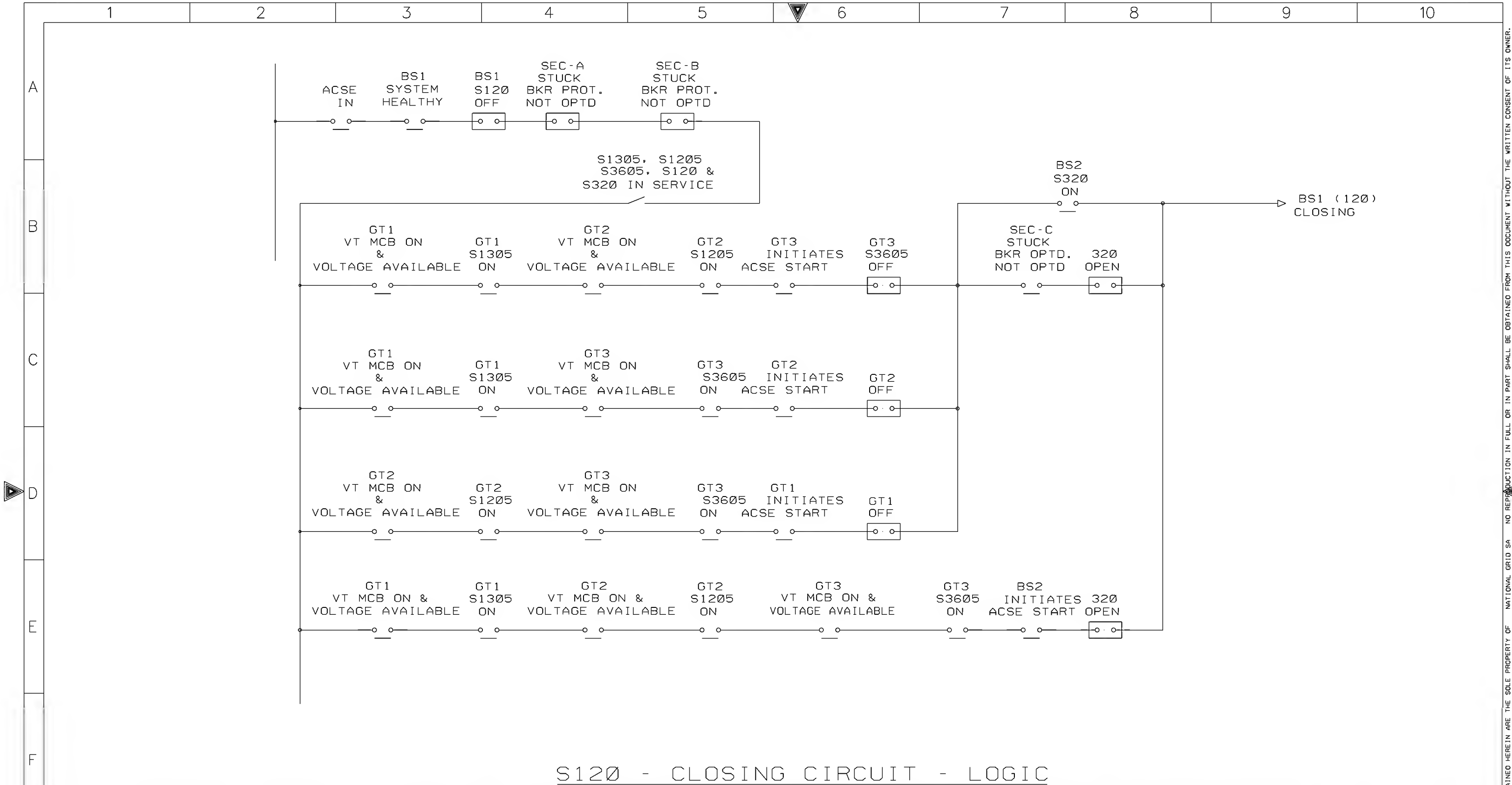
LOGIC DIAGRAM +ACSE TOP

132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT-ACSE

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
P	C421	CD-322961	105B105C	00	



S120 - CLOSING CIRCUIT - LOGIC

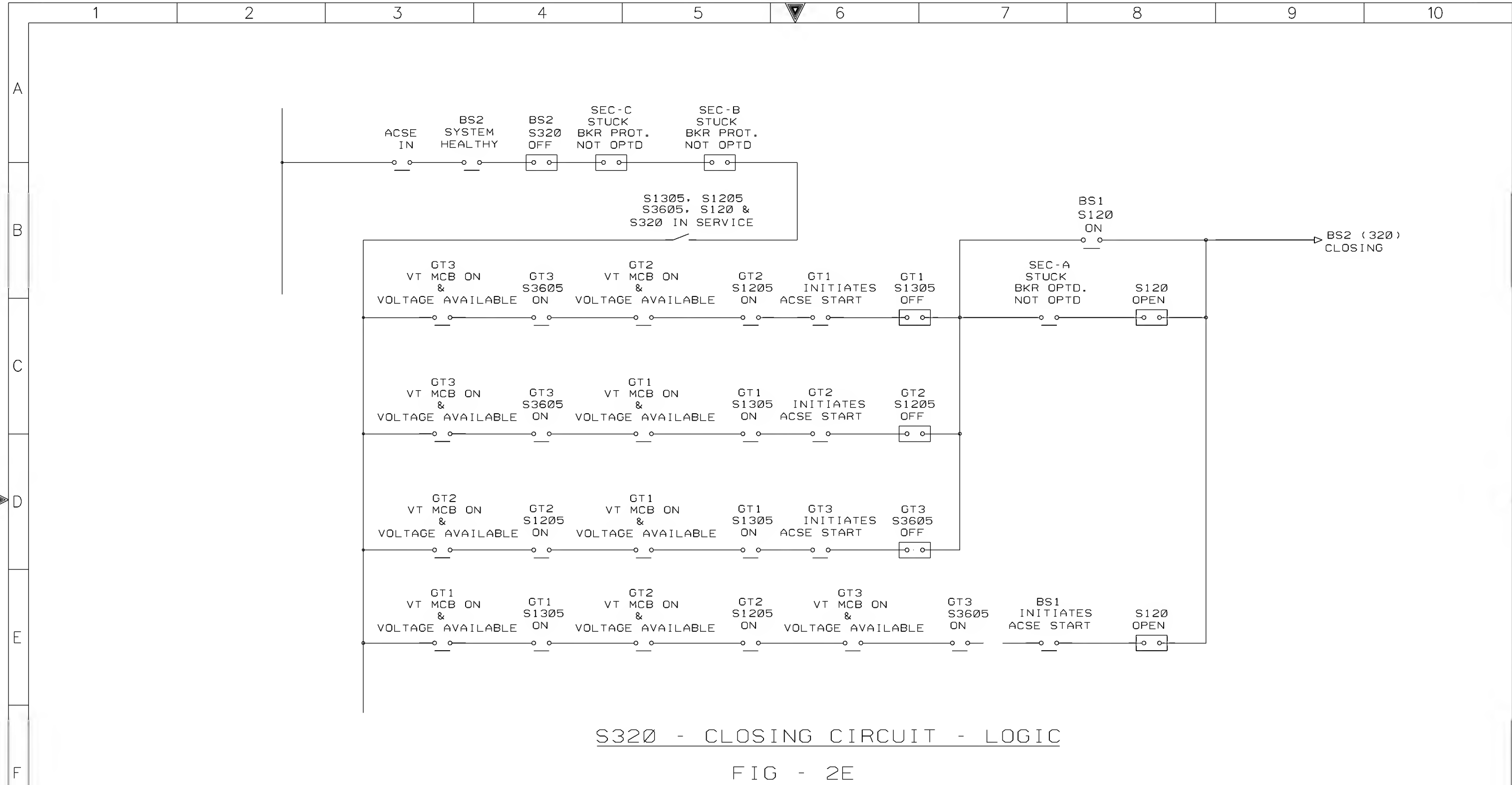
FIG - 2D

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>	
			DATE STARTED <u>2.22.2013</u> DATE COMPLETED _____	
			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	
00	13 09	FOR APPROVAL		
REV. NO.	DATE	DESCRIPTION		

LOGIC DIAGRAM +ACSE TOP
132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT-ACSE
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
P	C421	CD-322961		SHT	CONT.	00
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AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 2.22.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

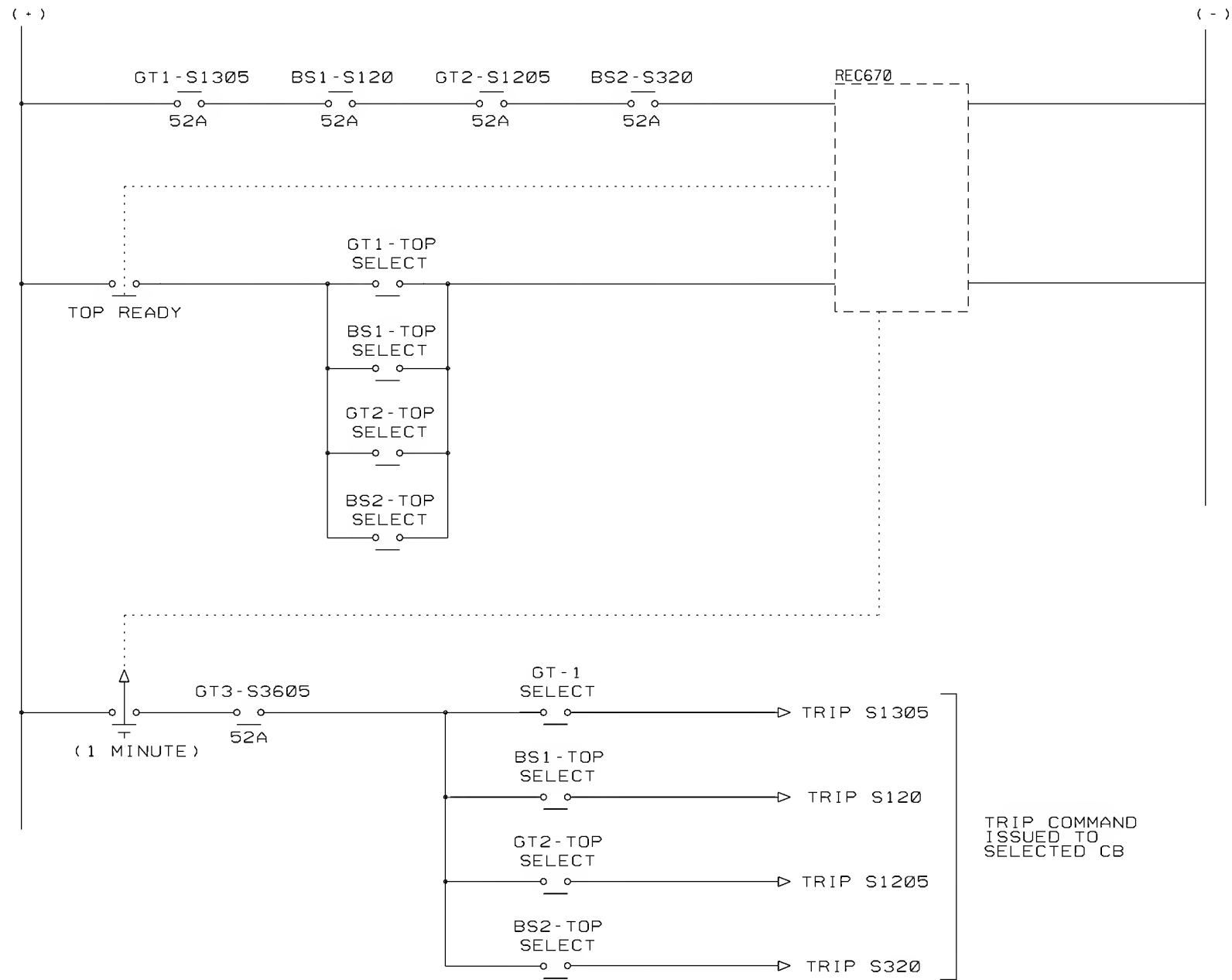
LOGIC DIAGRAM +ACSE TOP
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S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322961	1050105E	00

NG/D2-D (2012/01)
DMS VECTOR NGD200

TRIP ON PARALLEL LOGIC DIAGRAM



INITIAL CONDITION: GT3 CB S3605 OPEN
- GT1,GT-2,BS1 & BS2 CBS ARE CLOSED
- TOP IS SELECTED FOR GT1 OR GT2 OR BS1 OR BS2
- ALL FIVE 13.8KV FEEDER ARE IN SERVICE POSITION AND SELECTOR ON REMOTE (AT SWITCHGEAR)

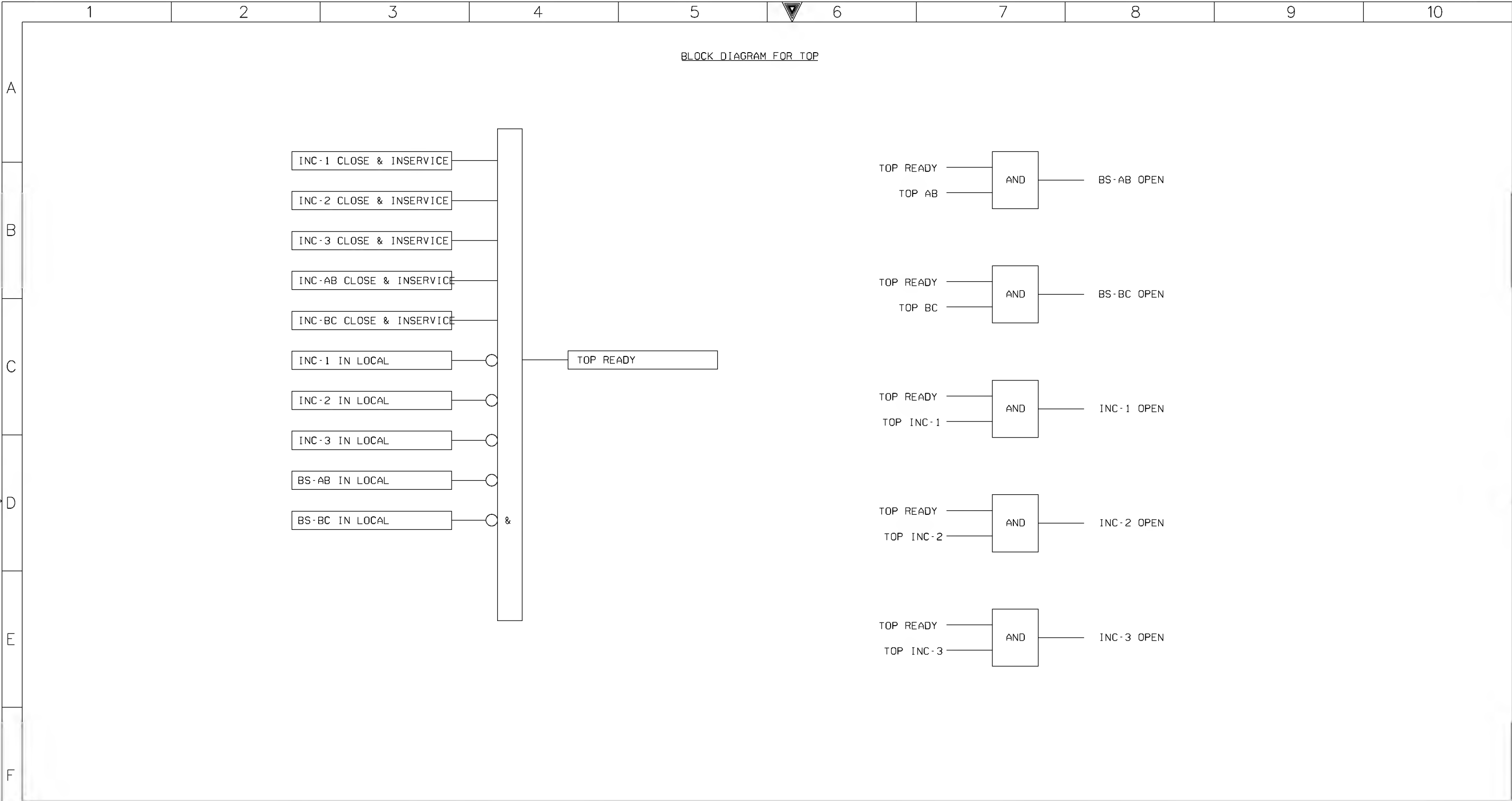
LOGIC
- IF GT3 CB CLOSED MANUALLY, THE SELECTED CB WILL TRIP AFTER 1 MINUTE
- SIMILAR LOGIC IS APPLICABLE FOR ALL OTHER BREAKERS

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

			DRAWN BY RIZ CHECKED BY KVR
			DATE STARTED 2.22.2013 DATE COMPLETED _____
00	13 09	FOR APPROVAL	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC
REV. NO.	DATE	DESCRIPTION	

LOGIC DIAGRAM +ACSE TOP
132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIP=ACSE
S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
P	C421	CD-322961	SHT 105F	CONT. 105F 00	



BLOCK DIAGRAM FOR TOP

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ALLCB CLOSED & TOP SELECTED CB TRIP LOGIC
			DRAWN BY RIZ	CHECKED BY KVR	132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT-ACSE
00	13 09	FOR APPROVAL	DATE STARTED 2.22.2013	DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
P	C421	CD-322961	SHT	CONT.	00
			105F	105G	

1

2

3

4

5

6

7

8

9

10

A

B

C

D

E

F

G

INC-1

INC-2

INC-3

BUS "A"

BUS "B"

BUS "C"

BS-AB

BS-BC

1. THE ACSE WILL BE DESIGNED SO THET MAXIMUM 4 CB'S CAN PARALLED AT ANY TIME.

2. IF ALL 5 CB'S ARE CLOSED FOR 30SEC. AT ANY CONDITION ACSE WILL TRIP BS-BC AFTER DEFINE TIME OF T SEC *.

* - ADJUSTABLE

(T = 0--->650MS*)

TIMER SETTING RANGE

FROM 0 TO 650MS

SUPPLY STATUS	ACSE RESPONSE	INC-1	BS-AB	INC-2	BS-BC	INC-3
INC-1 AVAILABLE (U1 = UN) & INC-2 AVAILABLE (U2 = UN) & INC-3 AVAILABLE (U3 = UN)	INITIAL CONDITION	1	1	1	1	0
INC-1 AVAILABLE (U1 = UN) & INC-2 AVAILABLE (U2 = UN) & INC-3 AVAILABLE (U3 = UN)	STEP #1 (T = 30SEC.)	1	1	1	1	0-1
	STEP #2 (T = 45SEC.)	1	1	1	1	1

1. THE INITIAL CONDITION FOR MANUAL CLOSING OF HOT STANDBY BRK/ANY ONE OUT OF FIVE BRK BY TOP PUSH BUTTON ARE FOUR BRKS OUT OF FIVE BRK SHALL BE CLOSED IN CLOSED POTION. ALL FIVE BRKS. ARE IN SERVICE AND NOT IN LOCAL FROM SWITCH GEAR.

2. THE INITIAL CONDITION FOR OPENING OF AMY BRK.

A. ALL FIVE BRKS ARE IN SERVICE AND CLOSED POSITION.

B. THE SELECTED BRK. OUT OF FIVE FROM TOP SELECTOR SWITCH OPEN AFTER 45SEC. IN OUR CASE INCOMER-3 IS OPEN AND OTHER FOUR ARE CLOSED. LOGIC : INCOMER-3 IS CLOSED MANUALLY. THE SELECTED CB FROM TOP SELECTOR SWITCH WILL OPEN AFTER 45 SEC

NOTE : SIMILAR LOGIC APPLICABLE FOR OTHER BRKS.

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 2.22.2013

DATE COMPLETED _____

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC


ALLCB CLOSED 7 TOP SELECTED CB TRIP LOGIC

132/13.2 kV AUTOCHANGEOVER SWITCHING EQUIPT=ACSE

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
			SHT	CONT.	
P	C421	CD-322961	105G	NIL	00

NG/D2-D (2012/01)

DMS

VECTOR

NGD200